Claims

1. Method for the production of a ceramic substrate including the following steps:

- provision of a basic body (1) comprising a stack (1a) of layers (2, 3) stacked on top of one another, each of which contains a non-sintered ceramic material and a binder, wherein electrically conductive ducts (4) are provided in each of the layers (2, 3),

- debinding of the layers (2, 3) in a temperature interval of T_{E1} - T_{E3}, wherein T_{E1} is the minimum temperature of debinding and $T_{E3} > T_{E1}$.

- dense sintering of the layers (2, 3) at a temperature of $T_S \geq T_{E3}$,

wherein the process steps b) and c) are performed in one and the same furnace,

wherein the temperature T of the basic body (1), throughout the entire period from the beginning of process step b) to the end of process step c), is maintained so as not to fall below the minimum temperature T_{E1} of the debinding.

2. Method according to claim 1,

in which, prior to process step a), openings are formed in the layers (2, 3) stacked on top of one another, each being filled with a metalliferous paste.

3. Method according to claim 2,

wherein a metalliferous paste is used that contains silver or silver-palladium.

4. Method according to one of claims 1 to 3,

wherein at least two of the layers (2, 3) stacked on top of one another consist of different ceramic materials.

5. Method according to one of claims 2 to 4,

in which a first layer of a first ceramic material and a second layer (2, 3) of a second ceramic material, which is disposed on top of said first layer, are provided,

wherein the first ceramic material begins to sinter at a temperature T_{S1} and the second ceramic material at a temperature T_{S3}, wherein the metalliferous paste begins to sinter at a temperature T_{S2},

wherein the following applies: $T_{S1} < T_{S2} < T_{S3}$.

6. Method according to claim 5,

wherein the first ceramic material is selected in such a way that in the sintered state it has a relative permittivity ε_1 to which applies: $7 \leq \varepsilon_1 \leq 8.5$, and

wherein the second ceramic material is selected in such a way that in the sintered state it has a relative permittivity ε_2 to which applies: $18 \leq \varepsilon_1 \leq 22$.

7. Method according to one of claims 2 to 6,

in which structured metallization layers, which are made of the metalliferous paste, are provided between the layers (2, 3) disposed on top of one another.

8. Method according to claim 6,

in which at least one of the layers of the first ceramic material forms a stratified compound with at least one of the layers of the second ceramic material,

wherein several of such stratified compounds are formed,

wherein each of the structured metallization layers is formed between the stratified compounds.

9. Method according to one of claims 1 to 8,

in which process steps b) and c) are performed in an inert atmosphere.

10. Method according to one of claims 1 to 8,

in which process steps b) and c) are performed in an air atmosphere.

11. Method according to one of claims 1 to 8,

in which the atmosphere in the furnace is converted from an inert atmosphere to an air atmosphere during process step b).

12. Method according to claim 11,

in which, in process step b),

a first part of the debinding is performed in a temperature interval of T_{E1} - T_{E2} while the temperature is increased monotonically, wherein $T_{E1} < T_{E2} < T_{E3}$,

in which, subsequently, the temperature T is reduced to a value of $T_{E1'}$, where $T_{E1} \leq T_{E1'} < T_{E2}$,

in which, subsequently, the temperature T is monotonically increased to the value T_{E3}.

13. Method according to claim 12,

in which the first part of the debinding is performed in an inert atmosphere,

in which the atmosphere in the furnace is converted to an air atmosphere concurrently with the reduction in temperature to a value of $T_{E1} \leq T_{E1'} < T_{E2}$.